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مبحث 4 فصل 4

1- $(a-2)x^2 + ax + b = 0 \Rightarrow a-2=0 \Rightarrow a=2$

$2x + b = 0 \Rightarrow x = -\frac{b}{2} \Rightarrow -\frac{b}{2} = 2 \Rightarrow b = -4$ (پ)

2- $f(x) = \sqrt{x^2 + x + 2 - m^2}$ $D_f \subset \mathbb{R} \begin{cases} \Delta = 0 \\ \Delta < 0 \end{cases} \Rightarrow x > 0 \Rightarrow + \frac{x}{0} +$ $\left. \begin{array}{l} \Delta < 0 \Rightarrow x > 0 \Rightarrow + \frac{x}{0} + \\ \Delta = 0 \Rightarrow x = 0 \Rightarrow x = 0 \end{array} \right\} 1 - (-1) = 2$ (پ)

$\Delta = 0 \Rightarrow x + x + 2 - m^2 = 0 \Rightarrow m^2 = 1 \Rightarrow m = \pm 1$

$\Delta < 0 \Rightarrow x > 0 \Rightarrow x + x + 2 - m^2 < 0 \Rightarrow m^2 < 1 \Rightarrow -1 < m < 1$

3- $f(x) = \frac{\sqrt{2-x^2}}{[x] + [-x] + 1}$ $[x] + [-x] + 1 \neq 0 \Rightarrow [x] + [-x] \neq -1$ (پ)

$2-x^2 \geq 0 \Rightarrow -2 \leq x \leq 2 \Rightarrow D_f = \{-2, -1, 0, 1, 2\} \Rightarrow$ (پ)

$x \in \mathbb{Z}$

4- $y = \sqrt{x^3 + 3x^2}$ $x^3 + 3x^2 \geq 0 \Rightarrow x^2(x+3) \geq 0 \Rightarrow \frac{-3}{+ \ 0 \ + \ 0 \ +}$ $D_f = [-3, +\infty)$ (پ)

5- $\frac{\sqrt{(x^2-1)(x^3-3x^2)}}{x^3-1}$ $\frac{x^2(x-1)(x+1)(x-3)}{(x-1)(x^2+x+1)}$ $\frac{-1}{+ \ 0 \ - \ 0 \ +}$ $\frac{3}{+ \ 0 \ - \ 0 \ +}$

$D_f = (-\infty, -1] \cup [3, +\infty) \cup \{0\}$ (پ)

6- $\sqrt{|x-2| - 3}$ $|x-2| - 3 \geq 0 \Rightarrow |x-2| \geq 3 \Rightarrow x-2 \geq 3 \Rightarrow x \geq 5$ $x-2 \leq -3 \Rightarrow x \leq -1 \Rightarrow D_f = (-\infty, -1] \cup [5, +\infty)$ (پ)

7- $\sqrt{2-|x-2|}$ $2-|x-2| \geq 0 \Rightarrow |x-2| \leq 2 \Rightarrow -2 \leq x-2 \leq 2 \Rightarrow 0 \leq x \leq 4 \Rightarrow D_f = [0, 4]$ (پ)

راه حل تشریف منتهی آخر! $Df = (-\infty, \infty)$

الف) $\sqrt{1-x|x|}$

$1-x|x| \geq 0 \Rightarrow |x| \leq 1 \Rightarrow Df = [-1, 1]$

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ب) $\frac{1}{\sqrt{3-|x-1|-1}}$

$3-|x-1|-1 > 0 \Rightarrow |x-1| < 2 \Rightarrow x-1 < 2 \Rightarrow x < 3$ و $x-1 > -2 \Rightarrow x > -1$
 $Df = (-1, 3)$

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$\sqrt{3-\ln|x-1|} - 1$

الف) $\frac{\sin^2 x - 1}{\cos x}$

$\cos x \neq 0 \Rightarrow Df = \mathbb{R} - \{k\pi \pm \frac{\pi}{2}\}$

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ب) $\frac{\cos x}{r \cos x - 1}$

$r \cos x - 1 \neq 0 \Rightarrow \cos x \neq \frac{1}{r} \Rightarrow Df = \mathbb{R} - \{k\pi \pm \frac{\pi}{r}\}$

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الف) $|x+1| - |x+3| \neq 0$

$|x+1| \neq |x+3| \Rightarrow x+1 \neq x+3 \Rightarrow x \neq 1$
 $|x+1| \neq -(x+3) \Rightarrow x+1 \neq -x-3 \Rightarrow x \neq -2$
 $Df = \mathbb{R} - \{1, -2\}$

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ب) $|x+1| - |x+3| \geq 0$

$|x+1| \geq |x+3| \Rightarrow (x+1)^2 \geq (x+3)^2 \Rightarrow x^2 + 2x + 1 \geq x^2 + 6x + 9 \Rightarrow -4x \geq 8 \Rightarrow x \leq -2$
 $Df = (-\infty, -2]$

$x-1 > 0 \Rightarrow x > 1$

$\log_{\frac{1}{r}} x-1$

$0 < \log_{\frac{1}{r}} x-1 < 1 \Rightarrow x-1 < r \Rightarrow x < r+1$

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$x-1 > 0 \Rightarrow x > 1$

$Df = (1, r+1]$

الف) $r \cos x + 1 \geq 0$

$\cos x \geq -\frac{1}{r}$

$Df = (k\pi - \frac{\pi}{r}, k\pi + \frac{\pi}{r})$

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ب) $\frac{x-1}{x+1} > 0$

$\frac{x-1}{x+1} > 0 \Rightarrow x > 1$
 $Df = (1, \infty)$

$1 - n|n| \geq 0$ (الف - 4)

$n \geq 0 \rightarrow 1 - n^2 \geq 0 \rightarrow n^2 \leq 1 \rightarrow -1 \leq n \leq 1 \xrightarrow{n \geq 0} 0 \leq n \leq 1$

$n \leq 0 \rightarrow 1 + n^2 \geq 0$

هذا هو مثبت $\sim$

النتيجة مرتدائيتهم فعل تاثير را رسد كنيم

$D_f = (-\infty, 1] \leftarrow$

(ب - 4) $3 - |n - 5| \geq 0 \rightarrow |n - 5| \leq 3 \rightarrow -3 \leq n - 5 \leq 3 \rightarrow 2 \leq n \leq 8$

$\sqrt{3 - |n - 5|} - 1 \neq 0 \rightarrow \sqrt{3 - |n - 5|} \neq 1 \rightarrow 3 - |n - 5| \neq 2 \rightarrow |n - 5| \neq 2 \rightarrow n \neq 7, 3$

$D_f = [2, 8] - \{3, 7\} = [2, 3) \cup (3, 7) \cup (7, 8]$